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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER	
VALDEZ, DEVE E	

ART UNIT	PAPER NUMBER
4151	

MAIL DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/588,346	SCHMIDT ET AL.	
	Examiner	Art Unit	
	DEVE VALDEZ	4151	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-11 and 26-39* is/are rejected.

7)☒ Claim(s) *12-25* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1. The listing of references in the specification is not a proper information disclosure statement. 37 CFR 1.98(b) requires a list of all patents, publications, or other information submitted for consideration by the Office, and MPEP § 609.04(a) states, "the list may not be incorporated into the specification but must be submitted in a separate paper." Therefore, unless the references have been cited by the examiner on form PTO-892, they have not been considered.

Claim Objections

2. Claims 12-25 are objected to under 37 CFR 1.75(c) as being in improper form because a multiple dependent claim should refer to the claims in the alternative only and cannot depend from any multiple dependent claim. See MPEP § 608.01(n). Accordingly, the claim has not been further treated on the merits.

3. Claim 6 is objected to because of the following informalities: “1,2-propane diol is repeated twice and there are no commas in between the chemical names “1,2-propane diol 1,3,2-methyl propane diol 1,3,butane diol 1,4, pentane diol 1,5,3-methyl pentane diol 1,5" are miswritten and should read as -- 1,2-propane diol, 1,32-methyl propane diol, 1,3-butane diol, 1,4-pentane diol, 1,5,3-methyl pentane diol. Appropriate correction is required.

4. Claim 6 is objected to because of the following informalities: Ethanol is not a diol. Appropriate correction is required.

5. Claim 29 is objected to because of the following informalities: "C nanotubes or C nanofibers additive" is miswritten and should read as-- carbon nanotubes or carbon nanofibers. Appropriate correction is required.

Claim Rejections - 35 USC § 112

6. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

7. Regarding claim 4 the phrase "for example" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

8. Regarding claims 4, 6, 10, and 11, the phrase "such as" renders the claim indefinite because it is unclear whether the limitations following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claim 26 is rejected under 35 U.S.C. 102(b) as being anticipated by Durand et al. (U.S. Patent 5,334,631, hereafter '631).

11. Regarding claim 26, '631dicloses a powder coating composition and teaches a well-known powder polyester resin and the nanoparticles are zinc dust. (Abstract; Column 1, lines 56-60; Column 2, lines 3-5)

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

13. The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

14. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of

35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

15. Claims 1-5, 7, 30, 32-36, and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krug et al. (U.S. Patent 5,716,679, hereafter '679) in view of Durand et al (U.S. Patent 5,334,631, hereafter '631).

16. Regarding claim 1, '679 teaches the composite material comprising a polymer matrix having incorporated inorganic components in the form of nanoscaled particles and the methods of preparation which comprises mixing a polymer precursor with a sol of nanosealed particles in an organic solvent and a polymerizable initiator to form a coating. (Abstract; Column 1, lines 61-67; Column 2, lines 1-11)

17. ‘679 does not teach a powder coating.

18. In analogous art, ‘631 teaches a powder coating composition comprising a polyester resin having zinc duct nanoparticles. (Column 1, lines 56-60, Column 2, line 4)

19. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to prepare polyester resins containing zinc dust in powder coatings in the form of a sol since sol also known as colloidal solution and colloid chemistry is a system between a true solution a suspension of nanoparticles according to Hawley's Condensed Chemical Dictionary (P. 1029, lines 1-2 and p. 286, lines1-9) for the benefit of producing the same product. In addition ‘679 teaches that Zinc oxide nanoparticles can be incorporated into the polymerization mixture.

20. Regarding claim 2, '679 teaches the polymerized particle with a sol of nanoscaled particles in an organic solvent and a polymerizable initiator. (Column 2, lines 56-59)

21. Regarding claim 3, 5, and 7, '679 teaches the hydrolysis and condensation process in the sol with particles. (Column 5, lines 15-17)

22. Regarding claims 30, 32-36, and 39, '679 teaches ferrite, zirconium dioxide, silicon dioxide, aluminum dioxide, titanium dioxide, and zinc oxide as the nanoscaled particles. (Column 1, lines 60-65; Column 2, lines 1-11)

23. Regarding claim 4, '679 teaches the components for the polymer matrix are mixed with sol of nanoscaled particles in an organic solvent such as alcohols, ketones, and esters. (Column 3, lines 5-7 and lines 13-15)

24. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krug et al. (U.S. Patent 5,716,679, hereafter '679) in view of Durand as applied to claims 5 above, in further view of McBain et al. (U.S.Patent 5,491,184, hereafter '184).

25. Regarding claim 6, the previous combination does not teach the diols.

26. In an analogous art, '184 teaches 1,2-propylene glycol as the diol in the unsaturated polyester resins which can be utilized in the polyester molding composition. (Column 13, line 23)

27. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize 1, 2- propylene glycol as shown in view of

‘184 in the previous combination since it has a low molecular weight for the benefit of having a linear and difunctional polyester chains with an average of two hydroxyl end group per polymer chain.

28. Regarding claim 10, the previous combination does not teach the esters of dicarboxylic acid such as adipic acid dimethyl ester, glutaric dimethyl ester or succinc acid dimethyl ester.

29. In an analogous art, ‘184 teaches dicarboxylic aids such as succinic acid, adipic acid, and glutaric acid. (Column 13, lines 32-33 and lines 60-64)

30. It would have been to a person of ordinary skill in the art at the time the invention was made to use dicarboxylic acids as shown in view of ‘184 in the previous combination for the benefit of having diols and carboxylic acids initiators which result in having a linear and difunctional polyester.

31. Claims 8, 9, and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krug et al. (U.S. Patent 5,716,679, hereafter ‘679) in view of Durand as applied to claims 5 and 7 above, in further view of Lubnin (U.S. Publication 2008/0188605, hereafter ‘605).

32. Regarding claim 8, the previous combination does not teach the outer liquid phase being a cyclohexane dimethanol in a hydrolysis process.

33. In an analogous art, ‘605 teaches cyclohexane dimethanol mixed with water. [0023]

34. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize cyclohexane dimethanol as taught in '605, in the previous combination, since cyclohexane dimethanol is miscible in water and affects solubility of monomers. Furthermore, hydrolysis and esterification are two different processes but they produce the same product.

35. Regarding claim 9, the previous combination remains as applied above and '679 further teaches the methanol in an esterification process. (Column 3, line 58)

36. The previous combination does not teach the cyclohexane dimethanol.

37. In analogous art, '605 teaches cyclohexane dimethanol which can mixed with methanol in the hydrolysis. [0023]

38. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize cyclohexane dimethanol with methanol as taught in '605, in the previous combination for the benefit of esterification which results in the same product as hydrolysis.

39. Regarding claim 11, the previous combination does not teach the dicarboxylic acids such as caprolactone or butyrolacton.

40. In an analogous art, '605 teaches caprolactones are the polyester diols. [0025]

41. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize the hydroxyl carboxylic acids particularly caprolactones as shown in '605 in the previous combination for the benefit of making polyester polyols.

42. Claim 27 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durand et al. (U.S. patent 5,33,631, hereafter ‘631) in view of Yadav (U.S. Publication 2004/178530, hereafter '530) .

43. ‘631 teaches a powder coating resin including a polyester that has zinc dust nanoparticles. (Abstract; Column 1, lines 56-60; Column 2, lines 3-5)

44. ‘631 does not teach the powder paint containing nano indium tin oxide.

45. In an analogous art, ‘530 teaches the carrier particle is a ceramic composition such as indium tin oxide. [0056]

46. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize nano-dispersed powders which comprises carrier particles such as indium tin oxide in view of ‘530 in ‘631 for the benefit of having closely packed small particles in order to make the sinter faster as the temperature increases.

47. Claims 28, 31, and 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Durand et al. (U.S. patent 5,33,631, hereafter ’631) in view of Yadav et al. (U.S. Publication 2004/0108628, hereafter ‘628) .

48. Regarding claim 28 and 31, ‘631 teaches the limitations of claim 26.

49. ‘631 does not teach vanadium oxide, silver particles, and sliver/titanium oxide as an additive.

50. In an analogous art, ‘628 teaches vanadium oxide, silver oxide, and silver/titanium oxide as nanoscale additives. [0065]

51. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize vanadium and silver oxide in view of '628 in '631 to prepare ceramic compositions containing oxide for the benefit of forming the shape of the thermal sensing material.

52. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durand et al. (U.S. patent 5,33,631, hereafter '631) in view of Douglas (U.S. Publication 2008/0044651, hereafter '651).

53. Regarding claim 29, '631 does not teach the powder coating formulation contains carbon nanotubes as nanoscale additives.

54. In an analogous art, '651 teaches carbon nanotubes nanoscale particles. [0018]

55. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to include carbon nanotubes of '651 in a powder coating of '631 for the benefit of forming a coating since carbon nanotubes have great conductivity and smooth surface morphology.

56. Claim 37 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durand et al. (U.S. patent 5,33,631, hereafter '631) in view of Smith et al. (U.S. Publication 2003/0087094, hereafter '094).

57. Regarding claim 37, '631 does not teach barium sulfate as a nanoscale additive.

58. In an analogous art, ‘094 teaches barium sulfate as the nanoscale particles. [0058]

59. It would have been obvious to a person of ordinary skill in the art at the time of the invention was made to utilize barium sulfate as a nanoscale additive in view of ‘094 in ‘631 for the benefit of a formation of a gel state in a polymer.

60. Claim 38 is rejected under 35 U.S.C. 103(a) as being unpatentable over Durand et al (U.S. Patent 5,334,631, hereafter ‘631) in view of McBain et al (U.S. Patent 5,491,184, hereafter '184).

61. Regarding claim 38, '631 does not teach clay minerals as nanoscale additives.

62. In an analogous art, ‘184 teaches mineral fillers such as clay can be used as additive for the formation of the mold compound composition. (Column 14, lines 63-66)

63. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to utilize mineral fillers such as clays as an additive since clays have internal mold release agents in view of‘184 in ‘631 for the benefit of forming the mold composition.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEVE VALDEZ whose telephone number is (571)270-7738. The examiner can normally be reached on Monday to Friday from 7:30 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Angela Ortiz, can be reached on Monday to Friday from 7:30 am to 5:30 pm. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/DEVE VALDEZ/

/Angela Ortiz/

Supervisory Patent Examiner, Art Unit 4151